

CGS 2024 Biology Prelim**Paper 2 Answers**

Qn	Answer Key										
	Section A										
1a	- high temperature denatures the enzymes (Few hours before) allows sufficient time for enzymes to work on the proteins in the meat / more proteins to be broken down		1 1								
1b	Pepsin, digest / break down proteins into polypeptides		1								
2ai	750 / 5800 X 100% = 12.931 = 13% (nearest whole number)		1 1								
2aii	Coronary artery		1								
2aiii	600										
2b	- Cardiac / skeletal muscle - More oxygen and glucose supplied for higher rate of respiration to release more energy OR - To remove lactic acid / carbon dioxide at a faster rate - skin - allow more heat to be lost to the surrounding		1 1 1 1								
2c	- less blood + QV , is transported to the digestive organs - less / slower digestion / absorption of digested food products		1 1								
3b	- ventricular diastole is occurring / left ventricles are relaxing - when pressure of left ventricle is less than the pressure of left atrium - bicuspid valves are opened		1 1 1								
4a	Both have muscle/elastic tissues / valves		1								
4b	<table><tr><th>C</th><th>F</th></tr><tr><td>Has RBC/WBC/platelets/plasma</td><td>No RBC/WBC/platelets/plasma</td></tr><tr><td>Has proteins/antibodies/amino acids/glucose/fats</td><td>No proteins/antibodies/amino acids/fats/glucose</td></tr><tr><td>Lower urea concentration</td><td>Higher urea concentration</td></tr></table>	C	F	Has RBC/WBC/platelets/plasma	No RBC/WBC/platelets/plasma	Has proteins/antibodies/amino acids/glucose/fats	No proteins/antibodies/amino acids/fats/glucose	Lower urea concentration	Higher urea concentration		1 1 1
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4c	<table><tr><th>C</th><th>Dialysis fluid</th></tr><tr><td>Has RBC/WBC/platelets/plasma/ antibodies / urea</td><td>No RBC/WBC/platelets/plasma / antibodies / urea</td></tr></table>	C	Dialysis fluid	Has RBC/WBC/platelets/plasma/ antibodies / urea	No RBC/WBC/platelets/plasma / antibodies / urea		1				
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5a	Respiration : glucose		1								
	Growth : amino acids / proteins		1								
5b	- add pH buffer for optimum pH OR - place / incubate at optimum temperature - to speed up the rate of enzyme reaction		1 1								
5ci	H		1								

Qn	Answer Key	
5cii	- bacteria - antibiotics are effective against / kills bacteria	1 1
5d	- bacteria is of different variety - some bacteria are more resistant to bacteria - patients did not complete course, resulting in more resistant bacteria surviving and reproducing	1 1 1
6ai	root hair cell	1
6aii	- solvent for transport - maintains turgidity of cells / keep leaf upright - medium for enzyme action any 2	1 1 1
6c	- photosynthesis - transpiration / replace thin film of moisture on mesophyll cells	1 1
6d	- rate of water loss is greater than rate of water uptake / rate of transpiration is greater than rate of water absorption - cell loses turgidity / wilting occurs	1 1
7b	90% of the energy is lost as heat via respiration / uneaten body parts / egested waste / excreted waste	1
7c	- Washed into the lake by rain and absorbed by the water plants - Organochlorides are non-biodegradable and cannot be excreted, will accumulate / become concentrated in the fatty tissues of organisms - As it passes along the food chain, it increases in concentration along the trophic level and become most concentrated at the highest trophic level	1 1 1
7d	- Nitrates / phosphates washed into the lake promotes the growth of algae, leading to eutrophication - Algae will block sunlight from reaching the underwater plants, which will die as they cannot undergo photosynthesis - Decomposers/bacteria will multiply in numbers, using up the oxygen in the water, causing the fish to die due to lack of oxygen	1 1 1
7e	- Breaks down dead plants and animals - Into simpler compounds like carbon dioxide that can be released into the atmosphere	1 1
8b	- Phenotype is independent of gender - Not related to age - There are more people with free earlobes than attached earlobes - This is discontinuous variation Any 2	1 1 1 1
8c	$(43+44) / (13+15) = 3.107$ - Ratio is 3 free earlobe : 1 attached earlobe	1 1
8d	- Monohybrid inheritance - Parents are heterozygous, allele for free earlobe is dominant	1 1
9a	- Chemical substance, produced in minute amount by endocrine gland - Carried by blood	1 1

Qn	Answer Key	
	To exert its effects on one or more target organs	1
9b	- Chemical molecules diffuses through the epidermis of skin into blood capillaries - Transported by plasms in the vein to the right atrium via the vena cava - And to the right ventricle, to the lungs and back to the left atrium, followed by left ventricles - And out of the heart via aorta to the artery that leads to the tongue	1 1 1 1
9c	- Receptors in the tongue are stimulated to generate nerve impulses - Transmitted by sensory neruone to the brain - Brain will interpret the taste	1 1 1
10a	- Diaphragm contracts and flattens - External intercostal muscles contract and internal intercostal muscles relax - Ribcage moves upwards and outwards, increasing volume of thoracic cavity - Pressure of atmospheric air is higher than pressure in lungs, causing air to rush in - At the alveoli, oxygen dissolves in the thin film of moisture lining the surface of the alveoli before diffusing through into the plasma and into red blood cell - Heart will pump blood containing oxygen to the liver where oxygen will diffuse from red blood cell into the tissue fluid and into the liver cell	1 1 1 1 1 1
10b	- When blood glucose level is below normal, more glucagon will be secreted by pancreas to be sent to the liver - Glucagon will stimulate liver cells to convert stored glycogen to glucose - Glucose is broken down during aerobic respiration to produce carbon dioxide and water	1 1 1
11a	- During day time, concentration of carbon dioxide is higher in the air than in the intercellular air space - Carbon dioxide molecules diffuses through the stomata and into the intercellular air spaces - Carbon dioxide dissolves in the thin film of moisture lining the mesophyll cells before diffusing into mesophyll cells - Carbon dioxide will diffuse into the chloroplasts of mesophyll cells - During photosynthesis, light energy will be absorbed by chlorophyll and converted to chemical energy - Carbon dioxide will react with water to form glucose - Excess glucose formed will be converted to starch and stored in leaf	1 1 1 1 1 1 1
11b	- Starch in leaf is broken down to form glucose - Glucose reacts with fructose to form sucrose which is transported / translocated by phloem to the roots - Sucrose is converted back to glucose and excess glucose is converted to starch for storage	1 1 1